



NEWSLETTER
Fall 2014 Vol. 36 No. 2

INSIDE

President's Message
NAAML P 2014 Conference.....2
Winter Meeting3
Dave Bucknam Award4
Stan Barnard Award4
NAAML P Scholarships.....5
James Lamarr Kennedy5
National Award6
Mid-Continent Region Award.....9
Appalachian Region Award12
Western Region Award15
Small Project Award17

UPCOMING MEETINGS

2015 Winter Business Meeting
Orange Beach, AL March 3-5

MISSION STATEMENT

1. To provide a forum to address current issues, discuss common problems and share new technologies regarding abandoned mine land reclamation;
2. To foster positive and productive relationships between the states and tribes represented by the Association and the federal government;
3. To serve as an effective, unified voice when presenting the states'/tribes' common viewpoints; and
4. To coordinate, cooperate and communicate with the Interstate Mining Compact Commission, Western Interstate Energy Board and all other organizations dedicated to wise use and restoration of our natural resources.

Dear NAAML P Membership,

I am honored to have been selected to serve as the President of the NAAML P for the next year. While our interests and issues can be dramatically diverse, we all share the common goal of reclaiming abandoned mines to both protect public health and safety and restore the environment. I look forward to working with each of you as we all work toward achieving the ultimate goal of eliminating all of the AML problems nationally. I would like to thank Bruce Stover of Colorado for his fine service to the Association over the last three years, and look forward to working with both Chuck Williams of Alabama, the newly elected NAAML P Vice president, and Justin Ireys of Alaska, the newly elected NAAML P Secretary-Treasurer, in the coming year on the many issues important to NAAML P.

I would like to thank the State of Ohio for hosting an outstanding NAAML P Conference and business meeting in September. I heard many compliments on the quality of both the technical sessions and the tours. In particular, I would like to thank Lanny Erdos and his key staff who made the conference such a success including: Ben McCament, Technical Sessions; Scot Hindall, Hospitality; Tim Jackson, Exhibitors and Sponsors; Ron Warner, Tours; Beth Wilson and Jocelyn Kozlowski, Public Relations; Jim Bishop, Banquet and NAAML P Liaison; Melissa Olszewski,

Registration; and Mike Bowden, Core Team Leader and Finances. In my opinion, one of the biggest highlights from the conference was the kickoff of discussions and planning for reauthorization of Title IV of SMCRA. I would like to thank Brian Bradley from the State of Pennsylvania and Murray Balk from the State of Kansas for co-chairing NAAML P's SMCRA Reauthorization Committee. There has been much interest in the effort and delegates and other volunteers from across the country have stepped up to help work on this very important effort.

For NAAML P's upcoming meetings, I would like to acknowledge the efforts of Chuck Williams and his staff from the State of Alabama for hosting the 2015 Winter Business Meeting next March in Orange Beach, AL as well as the efforts of John Kretzman and his staff from the State of New Mexico for hosting the 37th Annual NAAML P Conference and Annual Business Meeting next September in Santa Fe, NM.

I would also like to thank Greg Conrad of the IMCC for his continued fine work for the Association. Greg provides timely and up-to-date information on legislation and rulemakings, federal budget issues, and other issues of concern to the membership. I look forward to continuing to work jointly with IMCC to exempt our AML grants from sequestration.

In closing, I hope we can continue to work together to eliminate mine hazards and restore the environment as we have for the past 37 years since SMCRA was originally passed by Congress. While significant progress has been made, there is still much to be done. I welcome your input at any time and can be reached via email at ecavazza@pa.gov or via telephone at 814-472-1844.

I am looking forward to seeing everyone in Orange Beach.

Take care,
Eric Cavazza, President



2014 NAAML P Conference

The 36th annual NAAML P conference was held September 21-24, 2014 in Columbus, Ohio. The conference was very successful due to the excellent support of the nearly 30 sponsors and exhibitors who participated and provided support. The conference was heavily attended by staff from member states and tribes, the Office of Surface Mining, and other professionals involved in abandoned mine land reclamation from across the country. The staff of the Ohio DNR, Division of Mineral Resources Management - AML Program did an excellent job hosting the conference.



Almost 300 people participated in the three day conference. The plenary session speakers Loretta Pineda, Greg Conrad, Brian Bradley and Murray Balk did an excellent job of providing a framework for the attendees and NAAMLPSMCRA Reauthorization Committee as they begin their work on this important issue. The 40 different technical sessions provided attendees excellent information on the latest techniques and information to effectively and efficiently reclaim abandoned mine lands. The tours of The Wilds and City of Columbus were well received and all that participated had a great day experiencing the Buckeye State.



The Wilds



2015 NAAMLPS Winter Meeting, March 3 - 5

The National Association of Abandoned Mine Land Programs (NAAMLPS) Winter Business Meeting will be held in Orange Beach, Alabama, at the Perdido Beach Resort. The Pensacola International Airport is 29 miles/ 55 minutes from the resort, or the Mobile Regional Airport is 72 miles/ 1 hour 45 minutes away. Committee meetings will be held on March 4th. Business meetings will be held on March 5th.

RESERVATIONS:

The Perdido Beach Resort will accept reservations at a block rate until Friday, February 6, 2015. Group rates will no longer be available after this date. Reservations made after this date will be on a space available at the prevailing hotel rates basis. The block rate will be honored for 3 days prior to the meeting date and 3 days after the meetings have concluded.

Reservations can be made by calling 1-800-634-8001 or online at www.perdidobeachresort.com

The KEYWORD to use for the block rate is Alabama AML Winter Business Meeting, (Booking ID #11238)

Cancellations must be made a full five days before scheduled arrival to avoid a one night's room charge.

The block room rate is \$119.00/night, plus tax for single and double occupancy. Upgrades available.

NEARBY ATTRACTIONS / EVENTS:

Gulf Shores and Orange Beach Tourism 1-800-982-8562

Alabama AML Recommended Golf Honours Golf 1-866-honours(466-6877)

Craft Farm; Peninsula Golf and Racquet Club; Kiva Dunes; Golf Club of the Wharf

Catamaran Rides On The Gulf - Sail Wildhearts 251-981-6700

Gulf Fishing - From Hotel Dock: Wahoo Water Sports 1-888-81-wahoo(92466)

Others: Orange Beach Fishing Assn. and Charter Boat Directory 251-981-2300

Tangers Outlet Mall: Located on HWY 59(Gulf Shores Parkway), Foley, AL 251-943-9303

USS Alabama Battleship: 52 miles from Perdido Beach Resort (1hr 10min) 2703 Battleship Parkway, Mobile, AL 251-433-2703

Dolphin/Dinner Cruise - Gulf Shores Orange Beach Official Vacation Guide for more information on cruises in the gulf.

For more information please contact: Chuck Williams, Jeff Butler or Denise Kelly with Alabama AML 205-945-8671



Dave Bucknam Award

Nancy Roberts



Nancy Roberts graduated in 1978 from the WVU College of Forestry and began work in January 1979 as an OSMRE reclamation inspector in WV. In 1981, she left the regulatory program to work in the Title IV(AML) emergency program. She's worked throughout the Appalachian Region, stationed in Charleston, then Pittsburgh, and leaving her Project Manager position in Ashland KY in late 2001 to return home to WV back to Inspection and Enforcement. In 2005, Nancy moved back to AML again, working as a Physical Scientist.

Nancy became involved with the NTTP program soon after its inception and was instrumental in developing the advanced AML courses for Landslides and the Fire class. Nancy has not only taught both of these courses over the years, but is a Master Instructor and has taught the Basic AML class and other courses on Dangerous Openings and Erosion and Sediment Control. Her enthusiasm for this work continues and she is regularly called upon to be an Instructor and to help with updating course curriculum. For several years she also served on the National NTTP Steering Committee.

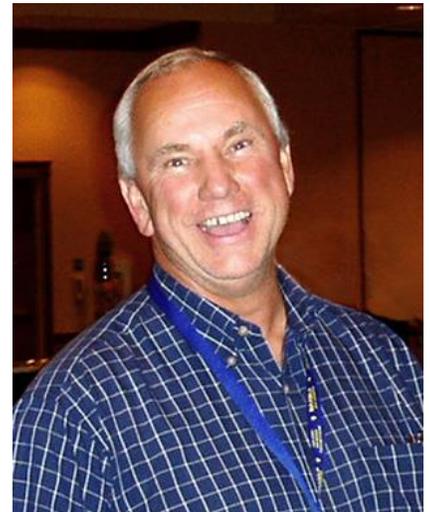
Nancy is a strong advocate for the work done by the State AML programs and is especially supportive and proud of the West Virginia Program efforts. Her vast experience in reclamation has enabled her to provide technical assistance on a number of AML problems in West Virginia and other States. She is enormously respected by her colleagues in OSMRE, the West Virginia AML Program and in other State AML programs, for her abilities as an instructor and for her knowledge and commitment to the AML reclamation programs.

Stan Barnard Award

Steve Herbert

Steve Herbert began his career in 1983 when he accepted a position as a Project Officer with the newly formed Indiana Abandoned Mine Lands Program, making him one of the “founding fathers” of the AML Program. Just a year later, he was promoted to supervisor of the Program Planning Section, which he oversaw for 16 years. In 2000, Steve was appointed as AML Program Director, during which time he helped shape the Indiana AML Program into the highly productive and well respected program that it is.

The AML Program was awarded the State of Indiana’s *Quality Improvement Award* in 2000 based on progress in implementing quality systems, standards, and training designed to add organizational value and improve customer service and satisfaction. In 2008, Steve received the Bureau of Resource Regulation’s *Innovation, Distinction and Efficiency Award* (IDEA) which rewards employees whose accomplishments or suggestions result in actual cost savings or revenue enhancement for the agency.



Steve was instrumental in setting up and administering the “Partners for Reclamation Program” which is a partnering project between the Sycamore Trails RC&D and the Indiana AML Program that provides an opportunity to help local citizens fix the adverse effects of coal mining on their property. These projects are typically too small and financially unfeasible to be done through the state design and bidding process. Steve also helped to establish the “Reclamation Re-Leaf Program” which was developed to establish healthy forests on previously mined lands to protect soil and water resources, provide wildlife habitat and eventually, timber production.

2014 Scholarship Winners

Hannah Angel



Ms. Angel graduated from the University of Kentucky in May 2014 with a Bachelor of Science degree in Forestry. Her long term objective is to work as a professional forester in the field conducting forestry reclamation on active and legacy coal surface mines in Appalachia using the Forestry

Reclamation Approach (FRA) and methodologies for mitigation problems associated with mine soils. For the summer of 2014, Hannah accepted an intern position with Luminant to work in the field at mine sites in east Texas with a goal of learning as much as possible about pine plantation establishment on reclaimed mine land. In the fall of 2014, she will be pursuing a Master of Science degree in Forestry at Stephen F. Austin State University in Texas. She will work as a teaching assistant for Dendrology. In her research, Hannah is interested in contributing to the advancement of the science of surface mine reforestation by applying some or all of the aspects of ARRI's FRA to improve forest growth and productivity. She is also interested in American chestnut restoration on mined lands.

Mason Oxford



Mr. Oxford is entering his second year at Montana State University. He is planning to earn his bachelor's degree in Civil Engineering with an emphasis in bio-resource management by May of 2017. He is excited at the opportunity to further his research and learn more about mine reclamation

projects. For several years, Mason helped his dad with their small general contracting business. Their main contracts were with the State of Colorado Abandoned Mine Reclamation Program. Mason has been involved in all sorts of reclamation jobs including the safeguarding of abandoned openings, tailings, re-vegetation, and underground coal fire mitigation. Outside of work and school, Mason enjoys all sorts of outdoor recreational activities. He is an avid hiker, kayaker, skier, motorcyclist, and general outdoor enthusiast. Mason looks forward to a career in reclamation services, so that he can keep enjoying the outdoors for the rest of his life.

In Remembrance James Lamarr Kennedy



Jim Kennedy served as a Technical Training Specialist and Instructor for the Office of Surface Mining's National (OSM) Technical Training Program. Fellow associates referred to him as a colleague and friend, describing him as kind and generous, as well as a supportive and insightful associate. Over the course of his career with the training program, he championed ways that science could benefit student learning, as well as educational practice. Mr. Kennedy was the Course Manager and the Project Manager for the development of seven abandoned mine land workshops: AML Design Workshop: Dangerous Highwalls, Dangerous Openings, Fires, Landslides, Subsidence and Drilling and Grouting and Reclamation Projects. He worked with the quantitative measurement of the training program, and was involved with virtually every aspect of the training program.

Jim was a US Army veteran and worked for the Department of the Interior for 45 years, plus. While in the army he was stationed at Fort Huachuca, in Arizona, and served as a medic. During his time with the Department of the Interior, he received several awards within Office of Surface Mining Reclamation and Enforcement.

James Lamarr Kennedy passed away at his home in Laurel, Maryland. He is survived by his loving wife Mary M. Scott-Kennedy, and his sons Marc Kennedy and Sean Kennedy, and 19 grandchildren.

Site 309 Mill Creek Highwall - Indiana

National Award Winner

This project addressed an extremely dangerous highwall located one-half mile north of Augusta in Pike County, Indiana. In addition to eliminating a severe public safety threat, this project is unique because the state negotiated with an active mining operation to complete the reclamation. This Cooperative Agreement resulted in a superior reclamation outcome at one-twentieth the cost of traditional reclamation. The replacement of a dangerous county road and the implementation of natural stream morphology provide further benefits to the community and environment.

A Significant Safety Problem: Approximately 4,200 linear feet of highwall was located directly adjacent to County Road 450 East, a narrow and sharply curving road heavily travelled by local residents. The highwall had a maximum height of 110 feet. The road was part of a school bus route, but it was not wide enough for vehicles to pass the bus without pulling off to the side. It had poor sight distances and hidden guardrails, and erosion of the highwall undermined the road's stability and created further safety hazards for drivers. Additionally, rocks falling from the highwall into the pit lakes below endangered boaters and fishermen.

An Innovative Solution: Triad Mining, Inc. has been operating the Augusta Mine, a surface coal mine to the south and west of the proposed reclamation area, since 2002. Under Title V Permit #S-350, this operation recovers the Springfield Coal seam and the overlying Bucktown Coal seam. Although the original boundary for #S-350 was well to the south and west of the highwall, Incidental Boundary Revision #7 extended the mining operations to the west side of CR 450 East, directly adjacent to the dangerous highwall on the east side of CR 450 East. Because the expansion of Augusta Mine was so close to the highwall on the east side of the road, AML staff realized that if mining were extended, the narrow road and highwall could



This 2010 aerial photo from Google Earth shows the road's former location and the new wider road to its west.

both be remediated as part of the active mining operation. AML staff approached Triad and formed a Cooperative Agreement for Triad to mine through the highwall as part of their operations. As a result of this partnership, Incidental Boundary Revisions #8 and #9 were delineated to include the highwall and the pit lakes on the east side of the road. Incidental Boundary Revision #7 ended just west of County Road 450 East and very close to the dangerous highwall across the road.

Difficulty of Achieving Reclamation: As the active mining operations at Augusta Mine were nearing the highwall, involved parties had to act quickly to reach agreements and obtain the necessary authorizations to address the AML site. To allow the work to begin right away, AML staff obtained an Authorization of Emergency Capital Expenditure from the Indiana Department of Administration's Division of Public Works. This allowed the division to contract with Triad without soliciting multiple bids.

Staff also worked to ensure that the required public notices, legal eligibility, and environmental documentation were in place to obtain Authorization to Proceed (ATP) from the federal Office of Surface Mining. This process required coordination with the U.S. Fish & Wildlife Service, Army Corps of Engineers, state floodway geologists, and archaeological experts in order to avoid impacting those resources. Triad submitted a copy of the ATP and their agreement with the State along with their applications for Incidental Boundary Revisions #8 and #9, in order to expedite the review and approval.





Dangerous highwall showing the unconsolidated material near the top. The eroding material undermined the surface stability.

Operations on the ground were constrained by the long and narrow work area, which limited the mobility of the large excavating equipment needed to do the work. After clearing vegetation and collecting topsoil, overburden material was removed through blasting and excavation and used to fill previously mined areas. Following coal extraction, disturbed areas were regraded and revegetated to the strict specifications of Triad's Title V Permit. With the redistribution of the overburden, the height of the highwall was reduced as opposed to backfilling it with solid material.

On-Site Effectiveness: A typical highwall backfill leaves a relatively steep slope, because gentler slopes require more fill material, additional cost, and an increased project footprint. This highwall reduction resulted in a better end product with rolling hills that approximate the original landscape of the area. The relocation of the county road allowed an increase in the runoff area that could be routed to Augusta Lake, which has persistent water quality problems associated with acid seeps.

The Army Corps of Engineers outlines mitigation requirements for impacts to aquatic resources. The open pit lakes filled during this reclamation project were remediated with the construction of a new ephemeral stream, which is a unique and diverse habitat that supports many plant and animal species. The 1,400 foot stream was designed using natural stream morphology, which involves a nonlinear shape and a variety of substrates. When completed, the stream should provide valuable wildlife habitat in addition to improving the water quality of Augusta Lake.

The position of the guardrail shows how close the road is to the edge of the highwall.

Funding: The Indiana AML Program developed a cost estimate and scope of work to backfill the highwall, the traditional reclamation method used to address this problem. The scope of work included clearing and grubbing approximately 35 acres of spoil, 1,304,000 cubic yards of earth moving, installation of drainage control structures, and wetland construction. The borrow material would have come from the adjacent Sugar Ridge Fish and Wildlife Area. The cost estimate for this work was \$6,214,900, with \$5,868,000 of the cost coming from the earthwork excavation. As proposed, this project would have been one of the most expensive ever performed by the Indiana AML Program.

The State of Indiana negotiated a Cooperative Agreement to pay Triad Mining \$305,000 to complete the reclamation of the Mill Creek highwall. Mining through the highwall allowed Triad to increase the yield of the mine, and the value of the coal extracted nearly covered the additional earth-moving costs. Paying only \$305,000 for a \$6.2 million reclamation project represents a tremendous cost savings of 95.1% of the original estimate.

An additional benefit of the project was the replacement of a narrow and sharply curving county road. Backfilling the highwall as a regular AML project would not have addressed this issue. Through an agreement with the Pike County Commissioners, Triad Mining closed the road during mining operations and then rebuilt it. The Commissioners strongly supported this reclamation project for the community's safety. The new road, which lies west of its original path, now consists of two twelve-foot lanes. The road has been straightened considerably, eliminating the blind corners and hidden guardrails. The old road would have continued to deteriorate due to the crumbling highwall, further endangering citizens.





The new stream has a non-linear path and variable substrate.

The new road better delineates the boundary of the Sugar Ridge Fish & Wildlife Area (FWA) to its east. Not backfilling the highwall eliminated the need for borrow material from the state FWA. While the original scope of work required that 35 acres of the FWA would be needed for borrow material, only 11.3 acres were directly impacted to remove the 4,200 foot long highwall. Sugar Ridge FWA draws numerous hunters and fisherman and provides year-round recreational opportunities.

Surface Mining Control and Reclamation Act: This project demonstrates that when active mining is occurring near abandoned mine areas requiring reclamation, significant cost savings can be achieved by an AML program through cooperative agreements with active coal producers. This arrangement both fulfills and exceeds the spirit and intent of the Surface Mining Control and Reclamation Act.

April 2014. The landscape now enjoys gentle, rolling hills.



The purpose of SMCRA is to require mining companies to return disturbed lands to the approximate contour and condition necessary for designated land uses, and it also sets up a mechanism to allow abandoned mine lands that adversely affect public safety to be remediated. This project managed to incorporate an AML problem into a current mining operation, allowing it to be reclaimed to the standards of the Title V program, at a significant cost savings to the Title IV Program. This model should definitely be pursued with other eligible AML projects.

Project Highlights

- 4,200 feet of 110-foot highwall removed, eliminating an extreme public safety hazard
- 0.8 miles of treacherous county road replaced, greatly benefitting local residents and school bus routes
- \$5,909,900 cost savings (\$6,214,900 cost estimate - \$305,000 spent)
- 23.7 acres of state Fish & Wildlife area saved from impact (35 acre estimate – 11.3 acres impacted)
- 1,400 feet of new stream constructed using natural stream design techniques
- Cooperating agencies: INDR Division of Reclamation, Title IV and V Programs, DOA, Division of Public Works, Army Corps of Engineers, Newburgh Field Office, Triad Mining, IDNR Division of Fish & Wildlife, Sugar Ridge FWA, & Pike County Commissioners.

**Indiana Department of Natural Resources
Division of Reclamation**

Goff AML Reclamation - Iowa

Mid-continent Region Award Winner

Iowa is a minimum program state for abandoned mine land reclamation funding. To make the most of its limited dollars, Iowa has adopted a partnership approach to link and leverage resources on each and every reclamation project. In looking at Iowa's recent AML projects, the Goff AML project truly exemplifies this partnership approach. The project was one of the largest, most complex projects in Iowa, and also involved the largest number of partners. It is also Iowa's most visible reclamation success story. The site was featured in three public field days, numerous newspaper articles and radio programs and was the subject of a lead story in Coal People magazine.

Project overview: The Goff abandoned mine site is located in Marion County which lies in the southeast quarter of Iowa. The 180-acre site was strip-mined in the 1960s, after being underground mined years earlier. The project area involved six landowners. Priority features on the site included dangerous highwalls, dangerous piles and embankments, clogged stream, clogged stream land, pit ponds, and industrial/residential waste. In addition, three natural gas pipelines transected the site with runs of spoil directly above them. The site had little value for wildlife or grazing. According to an aquatic and terrestrial study, vegetation on the edges of the site were only of marginal-quality. Lastly, the site was an attractive nuisance. There were persistent trespassing issues including people hunting and swimming without permission and people illegally dumping garbage.

Reclamation techniques and challenges: The Goff Reclamation project presented several technical challenges. The biggest challenge was working around three high-pressure, natural gas pipelines traversing the site. To ensure everyone's safety, precise planning and extreme caution were exercised in these sensitive locations. A second challenge was the hydrology of the site. Prior to reclamation the area had an un-named



tributary branching across the site and 19 ponds (four of which were Army Corps of Engineers (COE) delineated waters of the U.S.), totaling 9.78 acres. There were also 2.63 acres COE delineated wetlands. The presence of these COE waters meant the project design and construction not only had to ensure minimal disturbance of the stream channels and wetlands but also include mitigation. Other design challenges included numerous priority features and construction boundaries adjacent to multiple occupied structures. These combined factors presented challenges in developing the project design and also reinforced the necessity of precaution and safety.

In addition to these technical challenges, the Goff site is considered large for a typical Iowa reclamation project. Because of the large size, the project budget would consume a large amount of the overall reclamation funding allocated to Iowa. To keep it affordable, the project was divided into three phases and three separate construction contracts. With the project divided into three contracts, the design engineer needed to ensure each individual construction contract was successfully completed and that the final results of the three contracts were woven together into one seamless reclamation project. Three separate contractors were used to complete the project resulting in different equipment and different personnel responsible for each phase.

The reclamation plan involved traditional techniques used in Iowa abandoned mine reclamation: clearing and grubbing, pit dewatering, mass-grading, soil neutralization, and permanent seeding. The plan also involved nontraditional activities such as extra caution while grading in the natural gas pipeline area and enhancing multiple areas on the property for wetland mitigation. In addition, tile intake terraces, riprap lined channels, and temporary erosion and sediment control practices were utilized to insure site stabilization with minimal off-site impact.



Partnering for Success: The complexity of this project (pipeline safety concerns, complex hydrology, priority features, unavoidable funding constraints, etc.) provided multiple opportunities to build partnerships. Partnerships were forged with industry, landowners, local conservation groups, and local, state and federal agencies to make the reclamation possible. The engineer's opinion of probable cost presented an overwhelming obstacle for a one-time reclamation so it was crucial to secure additional cash and in-kind contributions.

Kinder-Morgan(Pipeline), Inc. played a key role by regularly assisting with construction observation throughout the three contracts. Kinder-Morgan provided a dedicated staff person for design review, site direction, and follow-up. Due to the company's commitment to communication and safety, natural gas service was never disrupted during the three years of construction. In addition, the ionic cathode protection system performed continually without any interruption.

The Marion Soil and Water Conservation District (SWCD), Red Rock Environment Education Fund (RREEF), Iowa Heartland RC&D and Pathfinders RC&D worked together to secure three Watershed Cooperative Agreement Program grants to help fund construction. In addition, these partners led efforts to inform and engage the public and provided funding support for three AML summer interns. AML summer interns helped monitor water quality on the site and assist with field day events.

Marion County Supervisors and Marion County Engineer and Secondary Roads Department also supported the projected with in-kind contributions of materials for crossings and culverts. Marion County ISU Extension and Marion County Conservation Board provided additional support through meeting space and outreach. All of these partners worked in cooperation with the Iowa Department of Agriculture and Land



Stewardship -Division of Soil Conservation to make this three year reclamation project a model abandoned coal mine reclamation project.

Reclamation Funding Sources: In 2009 the Iowa Legislature created an Iowa Jobs (I-JOBS) state investment program, through the issuance of bonds rather than raising taxes. This was a state recovery package designed, in part, to improve water quality, improve Iowans quality of life, and make smart investments to build a brighter economic future for all Iowans.

Sharing the Story: The Goff reclamation project attracted a lot of attention and interest over the three-year project. The project site was well positioned to host field days. The site is accessible by public roads on the east and south sides of the property.

In addition, the Red Rock Environmental Education Fund group members were eager to plan events to inform the community about Iowa mine reclamation. The first Goff field day was planned for spring 2010 but then had to be postponed twice due to very wet spring. This did not discourage event planners, however, and the first field day was finally held on June 23, 2010.

The highlight of the field day was hayrack tours of the project to observe both “before” and “during” aspects of the reclamation. Additional activities included partners’ testimonials, exhibits, lunch, and



*National Association of Abandoned Mine Land Programs Annual Conference - September 25, 2012
Technical Tour -Goff AML Reclamation Site -
Multiple partners presented a short program focusing on their role in abandoned mine land reclamation in Marion County.*

opportunities to interact one-on-one with the landowners, local conservation groups, and government agencies involved with the project. A local radio personality broadcast interviews with various partners.

The second field day was held July 26, 2011 with increased attendance of 90 participants. The program again featured hayrack rides to observe the reclamation progress for Contract #1. In addition, Contract #2 was underway and guests observed the new challenges presented in the second contract. One of these challenges was the grading taking place very close to private residences and outbuildings.

The third field day was held June 13, 2012. This event drew 130 people including landowners, neighbors, local, state, and federal agency partners, and related industry professionals. It was a record attendance for an Iowa AML field day and a very successful event.

Educational Outreach: Seventh grade students at Knoxville Middle School in Marion County routinely learn about the history of coal mining and mine reclamation. Marion County, along with neighboring Mahaska County, have 80% of Iowa's unreclaimed strip mines, making them a common feature on the landscape.

In 2013, the first annual 7th Grade Mine and Conservation Field Day was held in late April. During the day students visited three different sites to expand their knowledge about the history of mining in Marion County, how those abandoned mines affect the ecology of the area, and about measures and practices to conserve and restore those areas. The second annual field day was held in April 2014.

The Future: Though the reclamation of the Goff AML site is complete, local conservation groups and agencies including the Marion Soil and Water Conservation District and Pathfinders RC&D are committed to working with Goff site landowners to encourage land management decisions that will protect and sustain the reclamation investment well into the future.

Pathfinders RC&D recently received grant funds to develop landowner outreach materials to help landowners make sound management decisions to both enjoy and protect, their reclaimed land.

Iowa Mines and Minerals Bureau Abandoned Mine Land Program



7th grade field trip held in April 2013



Aaron Run Watershed AMD Remediation - Maryland

Appalachian Region Award Winner

The Aaron Run AMD Remediation Project (Project) eliminated the majority of acid mine drainage (AMD) inflow and raised the stream pH to meet Maryland's water quality standards for pH suitable enough for the reintroduction of native brook trout and other native fish populations. After construction of the three individual projects and watershed monitoring determined that water quality was improved, the Maryland Department of Natural Resources reintroduced native fish species from nearby stream populations to re-establish the native brook trout populations.

This project achieved recovery of native fish populations in Aaron Run and the impaired sections of the Savage River, which had experienced a 30 percent population reduction at the confluence with Aaron Run. Recovery of the watershed by completing the acid mine drainage remediation efforts created water quality conditions sufficient for MDE to request removal of Aaron Run from Maryland's 303(d) List for low pH impairment. An additional project benefit was improving water quality in the Savage River watershed, Maryland's only intact premier population of brook trout.

Project Site History: Western Maryland's Aaron Run begins in Savage River State Forest and flows about 3 miles to Savage River, a tributary to the North Branch Potomac River and the Chesapeake Bay. Aaron Run's 2,270 acre (3.5 square mile) watershed has several abandoned deep and surface coal mines that generate acid mine drainage that reaches the stream. The coal beds that underlay the Aaron Run Watershed include the Upper and Lower Bakerstown (also known as the Barton), Harlem, Pittsburgh, and Little Pittsburgh coal seams, with mining primarily in the Barton seam. Mining in the watershed began in the 1930's with the initiation of small deep mine

Electroshocking of Fish from Crabtree Run for Restocking



operations. Deep mining peaked in the 1940's, eventually being replaced by surface mining. About 102 acres of the watershed are underlain by abandoned deep mines. Additional surface mining in the watershed had disturbed several hundred acres, with most reclaimed by the operator. Water quality monitoring found pH as low as 3.5 in parts of Aaron Run. AMD inflows to the stream are concentrated in the middle/upper watershed where stream bank erosion problems were also identified. Low pH is believed to be the cause for the absence of brook trout in Aaron Run since the otherwise similar Savage River tributary streams support healthy native brook trout populations. Habitat degradation associated with Aaron Run AMD sources has also been observed in Savage River near the Aaron Run confluence.

Chemical Impacts: Low pH values in Aaron Run were documented since 1966 and there was also a decrease of pH in the Savage River at sites sampled below the confluence of Aaron Run. Water quality data indicated consistent decrease in pH and increase in mass loading of iron, aluminum and other metals in the downstream direction. The section of Aaron Run recommended for remediation efforts is in the same region that AMD sources were identified as major contributors of acid loading.

Biological Impacts: The overall trend among sites evaluated showed that low Benthic Index of Biological Indices (BIBI) scores were consistent with low pH values and this trended downstream. Additionally when sampling for fish, only two species were encountered. The decline of benthic scores and low pH was apparent in the stream, implicating acidity as a major element of impact before reclamation efforts were initiated in 2006.



Seep Discharge at Owens South – Preconstruction 2004

Aarons Run Owens South Site: construction of a passive treatment using alkalinity producing system (APS) technology in a limestone rock filled concrete tank and an oxidizing receiving pond. Due to limited space from the discharge to the receiving stream, the engineering design utilized the concrete tank to achieve the required volume for treatment based on the seep characteristics. Highly variable flows from as low as 5 gpm to 250 gpm and quality of 2.9 pH, 5200 specific conductance, 132 mg/l iron, 34.6 mg/l aluminum, 518 mg/l acidity, and 2402 mg/l sulfates have been reported.

Aarons Run Owens North Site: construction of passive system using a steel slag treatment system fed by intake from Aarons Run that flows very alkaline water into a two-sided collection and oxidizing pond. Seep discharge characteristics with flows of less than 20 gpm and quality of 2.9 pH, 4430

Clearing Highwall Bench for Construction of SAPS System and Doser



specific conductance, 161 mg/l iron, 34.6 mg/l aluminum, 667 mg/l acidity, and 2062 mg/l sulfates have been reported.

Aarons Run AMD Stream Site: construction of active and passive technologies, specifically two successive alkalinity producing cells (SAPS), one limestone leachbed, one oxidizing pond, and one water-powered, “Boxhom” type, calcium carbonate doser. Additionally, the project created one acre of treatment wetlands and restored 600 linear feet of eroding stream bank by re-establishing a flood plain. The project treats multiple AMD discharges from along the abandoned high wall bench and two deep mine seeps that flow from an adjacent site.

Overall Stream Impairment Impacts from the Three Sites: water quality in the mainstem of Aaron Run has had pH values in the low 4.0’s and averaged acidities of 501 mg/l, sulfates of 690 mg/l, iron of 11.8 mg/l and aluminum of 10.6 mg/l under low flow conditions and acidities of 6.8 mg/l, sulfates of 197 mg/l, iron of 5.8 mg/l, aluminum of 5.2 mg/l under high flow conditions.

Post construction monitoring demonstrated that the Total Maximum Daily Load (TMDL) and the State water quality standards for pH are now being met. In-stream conditions improved sufficiently that the Maryland Department of Natural Resources Fisheries Service reintroduced native brook trout to Aaron Run in August 2012. In October 2013, the Fisheries Service assessed the Aaron Run brook trout population and found both adults and several smaller individuals.

Partners and Funding: The project was conducted by MDE’s Abandoned Mine Land Division through partnerships for funding and activities with a number of agencies. MDE contracted with the Western Maryland Resource, Conservation,

SAPS 1 and Access Road Leading to Treatment Cells and Doser



and Development Council, Inc. for the two Owens projects and the Garrett Soil Conservation District for technical and management oversight services for the construction phase of the AMD Stream Restoration project. Funding from EPA 319(h) in three consecutive federal fiscal years (FFY05-07) funded planning, design and construction from late 2005 thru late 2011. Total project cost was \$1,151,219 including \$717,872 from the three years of 319(h) Grants. Other project funding was from the Federal Office of Surface Mining Title IV (\$76,930), the OSM Watershed Cooperative Grant (\$291,000) and two grants from the Eastern Brook Trout Joint Venture (\$65,417). The Maryland Fisheries Service provided fisheries management and related stream assessment and stocking services at no cost to the project. Portions of pre and post construction stream monitoring were provided by MDE's Field Services Division thru a separate ongoing 319-funded NPS monitoring and analysis project.

Completed and Vegetated Steel Slag Treatment Pond



Limestone, Calcium Carbonate, Water –Powered “Boxholm Doser”



Landowner Restocks Fish into Aaron Run



Oxidizing Pond – Discharge Flows to Run Doser

Remediation Projects Success: Construction of these treatment systems remediated the impacts of the severe uncontrolled acid mine drainage from these three sites. Now, Aaron Run consistently meets the State water quality standard for pH. With improved water quality, Aaron Run is capable of sustaining native fish populations and resulted in the re-introduction of native brook trout and other native fish populations in September 2012 in the upper reaches that are isolated by several waterfalls in the watershed. Natural recolonization by adjacent fish populations is predicted in the lower reaches of Aaron Run with the restoration of suitable water quality. Maryland Fisheries Service has reported reproducing brook trout evidenced by the recent assessment in 2013 which found young of the year. An additional environmental outcome of the project is the anticipated recovery of the trout fishery in the lower portion of the Savage River, which had evidenced by the inflow of AMD impaired water of Aaron Run.

Maryland Department of the Environment

Smith Hill Coal Mine - Colorado

Western Region Award Winner

The Smith Hill Project site, located on lands owned and managed by the Crested Butte Land Trust (CBLT), is approximately four miles northwest of the town of Crested Butte, Colorado, in Gunnison County, Colorado. It's located adjacent to the Gunsight Bridge, a popular foot bridge for trail access, and several hiking and mountain biking trails located in the Slate River Valley. The Smith Hill Mine, also called the Anthracite Mine, was the last stop on the rail line that connected the Town of Crested Butte to the coal mines located in the Slate River Valley. Significant coal wastes from the Smith Hill Mine and associated railway were found on the valley floor in the vicinity of the coal load out area. These refuse piles had fragmented the wetlands associated with the Slate River and disrupted the hydrologic characteristics of the area. The coal wastes supported limited vegetation, some of which were invasive species and noxious weeds. Coal wastes were also found around the tramway and on the hillside where the mine site was located. The initial inventory of the site identified two Priority 1 portals located near the top of the tramway. These were to have been closed as part of the overall site reclamation. Prior to reclamation beginning, however, the two entries were collapsed and covered by a large landslide. Therefore they were ultimately deleted from the project.

Additional issues at the site included a poorly functioning cattle load out area utilized by a local rancher, an artificial pond, formed from sedimentation, that flooded the access road, and unstable, highly erosive coal waste piles, located throughout the project area. The Smith Hill Project addressed abandoned coal waste piles located in the wetlands associated with the Slate River and several areas of un-vegetated, steeply sloping coal wastes located directly above the wetlands.



The Colorado Division of Reclamation Mining and Safety (DRMS) worked closely with the Crested Butte Land Trust, the Allen Family who has a cattle grazing permit in the area, the landowner of the mine, and the public to complete a successful reclamation project at the site. Approximately 11,000 cubic yards of coal refuse were removed from approximately 6 acres of wetland and adjacent upland areas. Three acres of wetland restoration and four acres of steep slope revegetation were accomplished as part of this project. The project increased the beneficial use of the area by repairing impacted wetland, improving wildlife habitat, reducing slope instability and erosion from coal wastes, and improving the functionality of the site as a cattle load out area.

Reclamation Concept

Reclamation planning for the Smith Hill Project began in 2010. Initial site reconnaissance included a vegetation survey and topographic survey of the existing wetlands and coal wastes located on the site. Based on the initial study conducted at the site, DRMS identified four major reclamation concepts for the Smith Hill Project:

- *wetland restoration including restoring wetland hydrology in areas fragmented by coal wastes,
- * improvement and stabilization of the cattle load out area and surrounding coal wastes,
- *steep slope stabilization and safety closures near the Cloud City town site and Smith Hill Mine,
- * involve the community and local stakeholders in as many parts of the reclamation as possible.





The primary environmental issue on the site was the fragmentation of the wetlands by coal wastes, and the erosive nature of the wastes along the fringes of the wetland and in the adjacent uplands. Additional issues included noxious weed infestations and coal wastes blocking surface waters from entering the wetlands. Reclamation activities began on August 8, 2011. The first step to securing the site was constructing a four-strand, wildlife friendly fence around the eleven acre project area. This task had to be complete before the Allen family mobilized their cattle through the project area. Construction of temporary roads and sediment controls were also installed prior to site excavation. Temporary roads had to be constructed through portions of the wetlands, to access the coal islands. To protect the underlying wetland vegetation, approximately one foot of certified weed free straw was placed on the ground surface and covered by one foot of coal waste, to allow hauling of coal using an excavator and articulated haul truck.

The goal of the coal excavation was to remove enough coal to allow the wetland hydrology to function. Original estimates identified approximately two feet of coal wastes present throughout the coal islands. Initial excavation identified an organic layer overlying a reduced clay layer. The organic layer was identified as the original ground surface, and the elevation goal for the coal waste excavation. Coal wastes were up to six feet thick in places, and averaged approximately four feet throughout the site. In some areas, the coal was deeper than the groundwater level. In those areas, small quantities of coal wastes were left in place. Several areas, originally identified as natural wetland, were coal wastes. Many of these areas were left in place, due to the healthy wetland vegetation population. A few areas that were well vegetated with wetland species had to be removed during the coal waste removal. The sod from these areas was salvaged, and re-planted in excavated areas. Large willows were growing in several of the coal islands. Many of the willows were in poor health, however, approximately 150 healthy live willows were transplanted during excavation.

Project partnerships between DRMS, the CBLT, the Allen Family Ranching, Tyler Land and Cattle, LLC., CCWC, and the Crested Butte Community made this a successful reclamation project. The wetland hydrology and vegetation has been restored to their pre-mining condition, site access and functionality has improved, erosion of the coal wastes on the steep slopes has been reduced, and the historical integrity of the site has been preserved for future generations. The site will continue to improve over time, and eventually may be opened to the public as a wetland park.

Colorado Bureau of Land Management Abandoned Mine Lands Program



Big Ben Emergency Shaft - Missouri

Small Project Award Winner

On the evening of January 29, 2013, a subsidence occurred between two homes located in Springfield, Missouri. It was believed that the area where the subsidence occurred is the location of an abandoned vertical mine shaft known as “Big Ben”. The Missouri Department of Natural Resources (MDNR), Land Reclamation Program (LRP) received reports about the shaft subsidence the morning of January 31, 2013. The LRP immediately began collecting information in preparation of a site investigation conducted later that morning. Maps obtained from the Missouri Geological Survey and georeferenced on aerial photos using Geographical Information Systems by the Greene County Resource Management Department showed a lead and zinc shaft entrance in the vicinity of the two homes. The homes were constructed approximately 20 years ago.

The vertical opening was originally a vertical shaft extending 190 feet deep and horizontally following the lead and zinc veins in opposite directions. It is believed the vertical shaft was filled in the 1950’s or 1960’s prior to the area being developed as a residential neighborhood. The subsidence around the vertical shaft created a vertical opening approximately 31 feet long, 14 feet wide and 15 feet deep between the two houses. What appeared to be mine related concrete foundations and unconsolidated fill were present in the cone shaped vertical opening.

The first priority was to ensure the foundations of both homes were stable and eliminate potential hazards to crews working in the area. One home was particularly vulnerable with the subsidence causing 60 to 70 percent of the footing under one side of the house to fall into the vertical opening. If not stabilized, it was believed the home would collapse into the vertical opening in the near future. The homeowners contracted with an engineering firm (Palmerton & Parrish, Inc. of Springfield, MO) for consulting and design to permanently

Final grade after backfilling, reseeding and mulching.



Initial investigation on February 1, 2013 showing vertical opening subsidence between houses on South Devon Road, Springfield, Mo.

stabilize the homes. The consulting engineer recommended constructing a cast in place concrete support beam that would span the length of the vertical opening and would be used to reduce the pressure placed on the exposed foundation. The footing and foundation on the other house appeared to be intact with some cracks appearing on the basement walls. The LRP contracted an excavating company for the placement of rock fill to stabilize the side slopes of the vertical opening, installation of temporary supports for the foundations of both homes, and to provide a suitable foundation for constructing the concrete cast in place support beam.

The consulting engineer designed a cast in place concrete beam and micro-pilings to permanently stabilize both homes. Through the consulting engineer, the LRP contracted with

Construction of the concrete cast in place beam.



DeWitt and Associates of Springfield, Missouri to construct the cast in place beam needed to span the vertical opening. The concrete beam was completed on March 15, 2013. Micro-pilings were installed on March 19, 2013 to support the cast in place concrete beam and were also installed around the foundation of the other home. On March 27, 2013 the LRP hired a contractor, (Freddy Van's, Inc.), to excavate into the existing mine shaft. The contractor excavated down approximately 18 feet, to the center of the mine shaft. Further excavation around the subsidence was not possible due to continued sloughing of the excavation area and the potential to weaken the micro-pilings.

It was decided that an oversized concrete plug would be installed that would prevent another catastrophic collapse. Loose material was removed from the vertical opening to create stable surface for placing the concrete plug. On March 29, 2013 approximately 77 cubic yards of concrete was placed in the conical shaped excavated hole and was reinforced with size #8 rebar.

Finished cast in place beam.



On April 9, 2013, the areas underneath the homes that had not been filled with concrete were pressure grouted by the contractor and 4 to 5 yards of grout was injected under the two homes. On the same day, some of the rock fill removed from the subsidence was placed over the concrete plug and graded out in preparation for landscaping the project area. The LRP staff environmental engineer, oversaw the excavation, development of the concrete plug, and grouting of the homes. On April 17, 2013 the excess rock fill removed from the subsidence was loaded onto dump trucks belonging to Greene County by the contractor hired by LRP. Greene County offered to haul and dispose of the excess fill. General cleanup of the project area was completed by the contractor on this date as well. A landscaping contractor (Hamby Construction) was hired by LRP and topsoil was placed and graded and the yards were mulched and reseeded on May 1, 2013.

Missouri Department of Natural Resources Abandoned Mine Lands Program

Installation of the concrete plug over the shaft opening.



NEWSLETTER ARTICLE SPECIFICATIONS

400 - 500 words. Articles subject to editing. Submit in e-mail or hard copy. 2 photo limit. Include author's name, title of article, captions for photos. Submit photos in TIF (preferred) or JPG format, 300 DPI, and original photo size. E-mail photos as individual files, not embedded.

Deadline for Spring Edition is April 15, 2015.

Email articles to Bob Scott (bobf.scott@ky.gov) or mail articles to: Bob Scott, Director
Division of Abandoned Mine Lands
Department for Natural Resources
2521 Lawrenceburg Road
Frankfort, KY 40601

For more information call Bob Scott, Mark Meade or Ben Enzweiler at 502-564-2141.